T 175 264 /360 cont./ their four fingers from the earthen dish or other vessel in which they keep it, even though they throw it from rather far away, nevertheless they put it so accurately into their mouths that they do not drop a single bit. So that some of us Frenchmen, wishing to imitate them, thought we would eat it in that fashion, and not being at all trained for that like them, instead of throwing it in our mouths, we discharged it on our cheeks and floured our whole face; /361/ consequently unless those principally who wore beards would have wanted to be accoutered as players of farces, we were constrained to take it with spoons" (Léry, Vol. I, pp. 143-144).

T 262 252 264 This comparison permitted me to suppose that roasted corn flour has simply replaced the "farinha" of the Brazilians. As we know, the pulp of manioc tubers, after being carefully squeezed in the tipiti, or trough, was roasted on a terra-cotta slab and changed into dry flour, with which the Tupinamba accompanied all their meals. The Chiriguano think the same way about atši: they say that corn flour, in order to be eaten, must have an accompaniment, an intina. To my way of thinking, atši and muínti are two substitutes for manioc flour that the Chiriguano invented or adapted after emigrating into a land where bitter manioc was unknown. Neither the other tribes of the Chaco nor the Quichua eat corn in this form, and, to my knowledge at least, there is no doubt that the Chiriguano introduced these two dishes into the country, without counting a goodly number of the ones which have been enumerated.

C 262 C [245] [197] The only fruits that the Chiriguano consume on a large scale are the prickly pear or tuna (Opuntia), which are seen in all their villages. They also plant some fig and orange trees when they are under mission influence. They are also great lovers of melons, of sandias (watermelons), and when they have eaten one of these which has pleased them particularly, they keep the seed. They love sugar cane with a passion. Sorghum is especially meant for the children, for whom these graminaceae are a veritable sweetmeat. They suck the juice, which is as sweet as that of sugar cane.

/14 cont./

241 grows up to two meters and even more, the mandioca /15/ produces one arroba per plant, and the sweet potato even more because a single plant can spread and extend eight or ten meters, being productive in every root put in the ground, just so it is suitably covered with earth there.

311 The fertility of the region which I describe cannot be doubted, but the inhabitants do not cultivate it. If in this area there were persons who liked to work, the land would produce more; for this is of no use to mestizo people either, since he who was a peon in Sucre or Tarija wants to be a gentleman here because he is not a Chiriguano, as a result of which the very banks of the rivers, those shores of the Parapiti and Río Grande which appear to be beckoning the farmer, remain almost uncultivated. Ticucha Canton is another area where a colony of foreigners would work miracles, planting vineyards and fruit trees and so many other products that could be developed there; the same could be said of so many other sites.

• [245] It seems that the grape does not grow in certain places, but this is because it has not been tried. Not long ago the missionary padre of San Antonio del Parapiti planted some 200 vine stocks. Who would believe it? Within six months some plants yielded quite ripe fruit, and the plants developed in an extraordinary fashion. In nearly all the missions there is cultivation of the vineyard, and in Charagua it is on a large scale through the work of foreigners; therefore what is needed are thinking men and good farmers in order to make these beautiful lands productive, especially along the river banks, where sugar-cane plantations, banana plantations, coffee fields, vineyards, and so many other things that are productive here could be established.

433 241 From the foot of Padilla Hill the forest is very vigorous and continues so to the east until it ends at Aguaragüe. Fig trees yield with little cultivation, the nopal with none at all since it flourishes on hillocks and hills and, such an agreeable and refreshing fruit, is the principal occupant. Chirimoyas, oranges, lemons, and guavas also grow, as well as onions and

824 /16 cont./
139
[114] I am going to make a brief list of some trees and plants which I know, without pretending to be a botanist, a subject I have not studied. I shall only say that I have learned it through experience and careful reading; when describing certain plants, I shall also make note of the use made of the bark, root, leaves, and branches of some.

ACACIA BALSAMICA. -- This is the quina-quina, under which name it is known here in Chiriguano country, a tall, straight tree, whose wood is ideal for building because the wood borer does not damage it; it is much used here in the construction of upper roofs, especially for the braches or trusses on which the roof frame is to rest. It is plentiful in Cordillera Province and even in Acero Province.

/17/ ACACIA SAPONARIA. -- This tree is large and its
[342] wood light, perhaps even lighter than cedar, but it is of less
[492] value; it is whitish and much used for making doors and windows, but the main use to which said wood is put is in saddleries to
[296] make pads for saddles. The seeds are similar to monkey ears
[515] and are good for washing clothes and to keep the skin of the face free of blemishes; here it is known by the name "timboy."

ACACIA AMARILLA /A. moniliformi/. -- It is a medium-sized tree of rather lightweight hardwood, for which reason drawers or wash basins and yokes for oxen are made with it.
[372] It is no good for making fire, because it smells when it burns, from which it gets the Chiriguano name "Tatane," fire that smells; the wood is yellow.

ACACIA ASTRINGENTE. -- There are many groves of
[342] trees of this class here and there; it is the most abundant tree,
[281] the wood is good for small joists because the wood borer does not eat it; the bark contains much tannin, and it is the wood most used for tanning hides by both Indians and whites; the latter call it sebil and the former "Curupau."

● 245 ACHIOTE. BIXA ORELLANA. -- This is cultivated in
137 fields and gardens, grows to a height of two and a half meters,
824 its leaves are dark green; it produces abundant fruit in a sort of pod covered with bristles and filled inside with fiery red seeds, which are what makes the little tree highly valued. They
[302] serve as food coloring, and the Chiriguano paint their faces
[303]
[439]

/17 cont./ and feet with them, as will be seen; for this last purpose it is prepared beforehand, many pods being boiled in an olla, and pastes of every size are made from the decoction, depending on the value that they wish them to have; it is traded by Chiriguanos and whites.

The Bixa orellana, or "Urucu," as the Indians call it, is a plant of high value for the Chiriguano; he will travel far to obtain a small amount in the towns or places where it is prepared.

ALGARROBO. -- The place where this extraordinarily large tree abounds is in the pampas; thus in the plain of "Curuyuqui" of Yvu Mission, Isoso, Parapiti, and the Gran Chaco it is found forming forests. It is very bulky and has long branches which on some touch the ground; its trunk is thick and not always erect, the wood is excellent, similar to oak in spite of being dark, and it is much used for making tuns, door and window casings, and even for barrels. In Chiriguano this tree is called /18/ "Ivopei," and the "Ivope" pod is long, compressed, and yellow; when it is ripe, it is sweet and much sought after by livestock and by the Chiriguano; it is their food and drink in times of scarcity as well as other times, and the mead that they make is extremely intoxicating. On the bank of the Pilcomayo even the whites eat this pod; the Toba, Choroti, Mataco, and others hold their orgies when the algarrobo ripens.

ALGARROBO CHICO. -- This is a smaller tree than the previous one, even its fruit is smaller, speckled in color, and sweeter than the true algarrobo, but not as abundant as the first. As the pods are small and the seeds within abundant, it is not highly thought of among the Chiriguano; they only eat it out of necessity or as a tidbit; the wood is not valued very highly because undoubtedly there are others that are better. In Chiriguano it is called "Ivope rai."

ALGARROBO AGRIO. -- This is also small, and it is called "sour" because the flavor of the pods really is sour. In times of scarcity it is also food for the Chiriguano; the pods are small, and the tree has its congenial sites. The Chiriguano Indians call it "Ivopetayi."

/19 cont./

137 824 [757] in dry places; when dampness penetrates it, it is destroyed in a few years, as experience has shown. The bark that is found under the first layer is split, washed in tepid water, and left to steep overnight; it cures intermittent fever. The Argentinians call it cacha, the whites quebracho, and the Chiriguano "Igũiraro."

AZUFAIFO /jujube tree/. -- This is abundant hereabouts [262] and is a tree of medium size. Its wood is not valued very highly, but the fruit, the size of a grape seed and of a dark coffee color, is a great resource in times of scarcity for the poor Chiriguano. It ripens in January and February and is liked even by cattle and by sheep and pigs. The whites call it mistol and the Chiriguano "Yuá."

• 245 BANANA TREE. -- Cultivated in orchards and well fenced-in fields, it forms a grove, and each plant yields or produces a cluster, very large on some of them. When the ripe cluster is removed, the plant that produced it must be cut in order that the others may produce their own. There are several [262] varieties, large and small, the latter very sweet and eaten as fruit, and the former only when boiled and roasted; the whites call them plátano, and the Chiriguano "Pacoba."

137 824 [271] BIGONIA ACUOSA. -- This is a tiny little bush one vara in height, which under the ground has a large root like a watermelon and even larger; it contains much pulp which, when squeezed, yields potable water and is used for it in times of scarcity. The Chiriguano call it "Sipoi."

[342] CATALPA. -- This is a large tree and fairly strong. Its wood is used in the construction of houses. The color of the /20/ wood is dark, but when it is newly cut it is somewhat [515] green. Its flowers are purple, and the Chiriguano chew them to whiten their teeth; they are bitter and because of this the tree is called "Tayi," or bitter, in Chiriguano, the whites call it lapacho.

CEIBA. -- A large tree with deformed trunk, and furnished with sharp points, broad leaves, and large, white flowers which produce a material similar to cotton without fibers, for which reason it is smoother and shinier; it is used for mattresses [322] and pillows and candle wicks. The wood is spongy and not at [415] all hard; from it are made troughs to hold water from year to year and in this way they are not soon damaged. Its ashes

/21 cont./

137 824 [245] GUAYABO /guava/. -- This fruit-bearing tree is found wild and cultivated; it is of medium size, and the fruit, when ripe, is yellow on the ouside and purple on the inside, and its bittersweet flavor is very pleasant and laxative. The green fruit and the roots are astringent; the Chiriguano know it by the same name. The wood has no use at all, and even if it [262] did, the Indians would not use it because it produces edible fruit. They regret it when any of these trees and others, like the algarrobo, are destroyed.

GÜEMBE. -- This plant thrives on the trunks of high trees, where it puts its root, and others which penetrate the ground [492] hang down from there. The roots and lianas are dark in color; very strong and durable halters are made from its bark; it is not found everywhere. One encounters it from the left bank of the Parapiti River; its fruit is similar to that of maize, for which reason it is called maize of the air, and it is edible.

HIGUERA AMERICANA /Amerigan fig/. -- This is the [262] guapoy of the Chiriguano and the bibosi of the populace; although the fruit is rather sour, it is edible. Bats like it, and it [757] is annoying to have this tree near the dwellings; it has a milky juice like the common fig tree, which, applied to wounds, [245] heals them. In addition to the above fig tree, there is the [439] common one which flourishes with very little care, in the towns, [431] especially the Mission ones, it is widely cultivated by the natives and its fruit is used by them for gifts and trade with the whites.

244 MANDIOCA. -- This plant is called "Mandio" or "Mandiporopi" by the Chiriguano Indians. A little book written by a Jesuit missionary of the old Paraguay missions relates that this plant was left to those Indians by Saint Thomas the Apostle who, according to their tradition, came here to preach the doctrine of the Redeemer. Mandioca is [252] an excellent food and very digestible; it is eaten boiled, [262] roasted, and fried in lard. It is a plant cultivated by whites and by Indians.

/22 cont./

137 824 is manufactured. On the slopes of the hills is also found the blackberry /zarzamora/, whose fruit is so pleasant to the palate, but whose thorn, which is like a cat's claw, is quite dangerous and barbed. The mulberry in Chiriguano is called "Tatayigua."

● 245 NARANJO /orange/. -- Neither the orange nor the lemon are native to the Chiriguano region, but they flourish greatly and grow to some height. Where it is easy to open irrigation ditches and possible to irrigate orange and lemon trees, they produce large, juicy fruit, the former being very sweet and the sourness of the latter being mild. The citron tree flourishes and is a plant imported here; its fruits are as big as gourds. The Chiriguano cultivate the orange tree here and there, but the whites cultivate it on a large scale; I know of some /23/ rather large orange groves, and they exist in nearly all the missions.

137 824 NOGAL. -- This tree of extraordinary height is only found wild; the leaves are very small and somewhat like those of the true nogal; the fruit is edible, but its shell is hard to crack. [258] The flavor and characteristics are the same as those of walnuts, so that oil, which is used instead of that from the olive, can be extracted from them. [322] The wood is rather dark and good for carpentry and cabinetwork, but it is inferior to that of the true nogal, which is found in the cultivated state where there [386] is sufficient moisture; a dark coffee-colored dye is prepared from the leaves, the bark of the trunk, or the roots, for dyeing wool, for staining other woods, and for printing ink.

NOPAL. -- This is the fruit-bearing plant which is most abundant in the region and which is found everywhere without any cultivation, for which reason it is most highly regarded by the Chiriguano, who is naturally lazy. But since it is sought [245] by the cattle, it is beginning to disappear or, more exactly, it is not found very much in the woods and clearings, but the Indian still cultivates it because it flourishes easily without need of irrigation and multiplies without the need of planting other shoots. It is convenient for the laziness of the Indian; the yellow flowers come out around each spathe and the fruit matures there as well; it is full of small seeds and sweet pulp, pleasant and refreshing. Some trees are covered with long

/24 cont./

245 PAPAYO. -- This tree is neither native like the palma Christi, nor is it found wild like the latter. It is grown in orchards or in well-fenced fields, grows very fast, and produces fruit one year after being planted. Its trunk is straight, soft, and hollow; some have two or three branches and rise up to four meters high. The fruit is refreshing, yellow, with a smooth skin, of the size and shape of a small melon, even the flavor being somewhat similar, but it is more digestible. Many fruits are bunched around the trunk and are also found here and there at each leaf, but always attached to the trunk. The plants which produce the fruit are the good ones, and they call them "females." There are others which they call "males," but their fruits are useless and are not attached to the trunk, but rather hang from it like streamers. It is useless to pick them. To have a good papayo tree they assert that, in transplanting one, it is necessary to take the precaution of always putting or burying two plants in each hole, one of which will always be a female, and the one which turns out to be male will be pulled out. I do not know if this is true, but I did it this way in January of this year. The fruit contains many seeds which, [757] when ground and drunk in an emulsion, are good for getting rid of worms. The fruit and the tree have a resinous milk. [252] Therefore, in order for the fruit to be good and digestible, it is better to cut off the ends and make about five or six vertical cuts so that this resin may come out; by the next day /illustration appears here/ /25/ it is already very pleasant. It is nevertheless best to take the precaution of letting them begin to ripen on the plant itself; in this condition, uncut, they will last up to six days without going bad; then they can easily be transported great distances.

137 824 [252] [262] PASSION FLOWER. -- This is a climber which is found on fences, clothing them in the rainy season with abundant foliage, as does the "supua," whose fruit is edible and good roasted or boiled, as is the leaf. The fruit of the passion flower is of the size of an apple and just as smooth, the skin is thin and the inside is found to be covered with a white, stringy membrane. When this is broken, the seeds of the fruit come

[Text continues on p. 43]

4: Nino--42 M-3 (1893-1911) 1912 SF10 Chiriguano SF10

●245

A Papaya Plant

/45 cont./

*136 *825 ● 245 Ants are a constant plague for the fields of maize which they destroy completely when they germinate; they are also a plague for gardens and grapevines, which in certain years wasps and black butterflies also greatly damage; they damage the grape when it is ripening. The latter can only be killed and destroyed by placing honey in bowls, where they die during the night by the thousands. The former are destroyed only by burning, thus destroying the bunches of grapes in which they have lodged. In Chiriguano ants are called "Tasi," and the black butterfly is called "Covocovo."

*136 *825 Locusts and worms do not constitute a constant plague. The former come in certain years, and the latter appear when, in November, there are many white butterflies which place their eggs in the grass. Worms generally travel by night, in the early morning, and in the afternoon, and flying locust from ten o'clock until four or five in the afternoon; wherever its larva goes, the fields are left as though they had been swept. The larva does not retreat, nor does it deviate from its course; it goes eastward and toward the hills, crossing pampas and climbing mountains. If one stops them on their way, they are able to remain for a month in the same spot. Their number can only be reduced by killing them in the ditches; nevertheless, when the maize plants are about 60 centimeters high, the larvae pass under them without doing great damage, and in this case it is best to let them pass and hurry them slightly. With daily struggle one can manage to defend a field against the larvae, even though they may be countless but to defend it against the worm is impossible.

*136 *[825] The locust is white and red; the latter is called "Tucupinta," the former "Tucunti," in Chiriguano. The white one appears at the end of October or at the beginning of November, and its passage through a region is not rapid; it will remain for days and weeks flying from south to north and vice versa, until it has deposited its eggs, which are put in the ground by the female, assisted by the male. They consist of a little cylinder about three centimeters long which contains up to a hundred eggs. Once the tube is put in the ground, the hole is closed with a yellow humor which comes out of the

/244 cont./

252 262 Gourds are eaten boiled, roasted, and in broth; the seed is enjoyed when roasted with maize meal, parched maize, or beans. They also eat them as broth, which they call Gñindaca mi quira, or grease of the gourd, to which they add chili pepper and salt, just as they do with beans cooked in ollas with the whole pod, which they call Sopirigua.

241 If the Chiriguano manages to plant a little maize beans /poroto/, and gourds, he is content and stops planting other, less important seeds. Few plant Yeti, sweet potato, Mandiporopi, mandioca, Tacuaneé, sugar cane, and Monduvi, peanut. They all plant watermelons and other melons; many plant figs and tunas, or nopal, and few cultivate orange trees, because this Indian has little patience for waiting on the ingratitude of certain plants which require much care and are very slow in yielding fruit (2).

[192] [197] 2. Names for watermelon /sandía/ and melon /melón/ do not exist in the Chiriguano language, which indicates that these fruits were introduced by the whites, from whom the Indians got them.

222 245 262 The nopal is very abundant in this area, rising to some three or four meters; its fruit is very exquisite, as everyone knows. Its cultivation is nil: it is enough to pluck off a branch of the main plant and bury it halfway, and its sweet fruit will ripen from the second year on. It is the plant that the Chiriguano value most.

245 Even the fig tree, which also needs little care, is cultivated. They call it Iva, as well as calling the nopal Saini, and both plants seem to be native, because they grow in hot places, and the name indicates that they have always had them. The fig tree requires more cultivation than the nopal, but this is relatively insignificant: they pull off a branch, plant it during the rainy season, and let it grow fully without pulling off any shoots (3).

439 3. Whites who live among the Indians are